The Journal of Thoracic and
Cardiovascular Surgery
September 1998

Aortic valves are antigenic but less so than myocardium

To the Editor:

We read with interest two articles, one by Rajani, Mee, and Ratliff[1] and the other by Mitchell, Jonas, and Schoen,[2] and noted especially the difference in the results regarding immunologic reactions of the aortic valves. In our primate heterotopic heart allotransplant model, donor aortic valves were rejected more weakly than myocardium. Mononuclear cells infiltrated into 90% of the donor aortic valves.[3]

Ten adult male macaque monkeys were subjected to heterotopic cardiac allotransplantation without immunosuppressive drugs. Allotransplanted hearts were rejected and stopped beating after 8 to 27 days. Pathologic examination revealed grade 3 to 4 rejection of the myocardial tissues in all the grafts. Aortic valves from six donor hearts showed subendothelial cell infiltration, and in three donor hearts there was cell infiltration into the stroma (Fig. 1), but valves from one donor showed normal structure without inflammatory cells. All animals received humane animal care in compliance with "Standards Relating to the Care and Management, Etc. of Experimental Animals (Notification No. 6, March 27, 1980, of the Prime Minister's Office, Japan)."

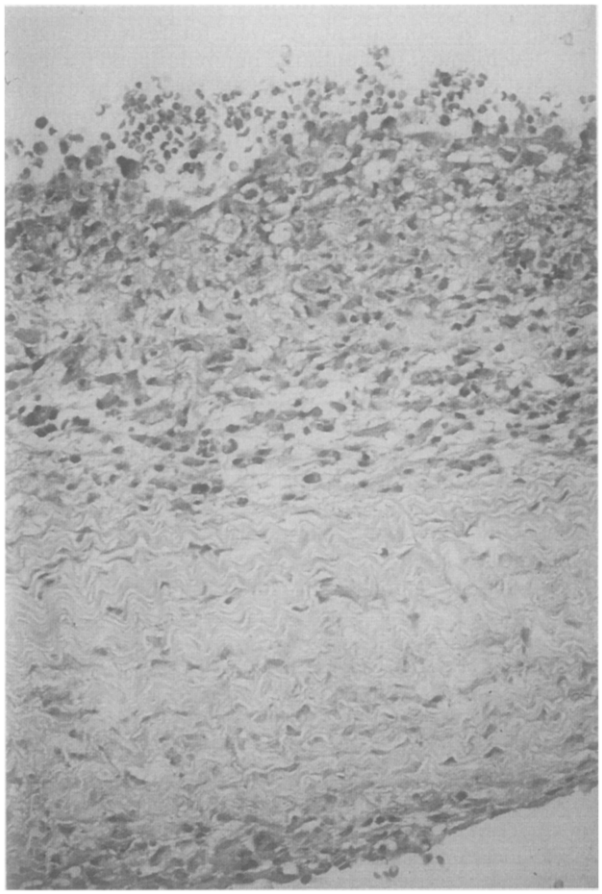

Fig. 1. Aortic valve with cell infiltration into the stroma. Mononuclear cells infiltrated into the stroma and normal valve structures are destroyed. The aortic valve was retrieved from the donor heart with grade 4 rejection. (Hematoxylin-eosin staining, original magnification ×80).

The antigenicity of the valves is so weak that the valves from the immunosuppressed recipient in Mitchell's studies did not show immunologic findings such as cell infiltration. In rodents, donor-specific cellular and humoral immune responses after aortic valve allografting were reported as similar in magnitude to skin allografting but somewhat slow in onset. Cyclosporine (INN: ciclosporin) arrested the homograft degeneration.[4, 5] The results of these studies including ours suggest that small-dose immunosuppression may arrest homograft degeneration, especially in infants, as in Rajani's report.

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Reply to the Editor:

The pathologic findings in aortic valves by Kawauchi and associates[1] in heterotopic heart allotransplant primates are very interesting. They report mononuclear cell infiltration in 90% of donor aortic valves examined 8 to 27 days after transplantation. These findings are similar to the observations in our study,[2] in which failed homograft (allograft) cardiac valves removed from infants demonstrated lymphocytic infiltration in valve leaflets and aortic sleeves.[2] In contrast, Mitchell and coauthors,[3] who examined explanted cryopreserved homograft heart valves and valves removed from transplanted homograft hearts,